

### REMARKS/ARGUMENTS

Favorable reconsideration of this application, in view of the above amendments and in light of the following discussion, is respectfully requested.

Claims 1, 2, 4, 5, 7-9, 11, 12, and 14-20 are currently pending in the application. Claims 1, 2, 4, 5, 7-9, 11, 12, and 14-17 are currently amended. Claims 18-20 are new. Claims 3, 6, 10, and 13 are canceled without prejudice or disclaimer. Support for amended Claims 1, 2, and 8 can be found in original Claim 3. Support for amended Claims 4 and 5 can be found in the published application at paragraph [0058], for example.<sup>1</sup> Support for amended Claims 7, 9, 11, 12, and 14-17 is self-evident. Support for new Claim 18 can be found in the published application at paragraph [0028], for example. Support for new Claims 19-20 can be found in the published application at paragraph [0031], for example. No new matter is introduced.

In the outstanding Office Action, Claims 15 and 16 were objected to under 37 C.F.R. § 1.75(c) for improperly depending from another multiple dependent claim. Claims 1-3, 7-10 and 14 were rejected under 35 U.S.C. § 103(a) as unpatentable over Draskovich (U.S. Patent No. 5, 704,759) in view of Freling (U.S. Patent No. 6,190,124). Claims 4-6 and 11-13 were rejected under 35 U.S.C. § 103(a) as unpatentable over Draskovich. Claim 17 was indicated as allowed.

Applicants acknowledge with appreciation the courtesy of Examiner Ryan Ellis and Supervisory Patent Examiner Edward Look in conducting a personal interview with Applicants' representative on January 20, 2010. In combination with the interview summary provided by Examiner Ellis, the substance of the interview is summarized hereinafter.

As discussed in the personal interview, the indication of allowed Claim 17 is greatly appreciated. In response, independent apparatus Claims 9, 11, and 12 are rewritten as method

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<sup>1</sup> Original Claim 6 erroneously listed a fused portion between the abrasive coating and the deposition layer. Amended Claims 4 and 5 correctly indicate that the fused portion is between the abrasive coating and the *rotor blade main body*.

claims. As method Claim 17 was indicated as allowed, Applicants respectfully submit that amended independent Claims 9, 11, and 12 are similarly in condition for allowance.

Applicants further note that the preamble of Claim 17 is amended for clarity. Moreover, the cited references do not suggest or disclose all of the features of amended Claims 9, 11, 12, and 17.

Applicants respectfully traverse the rejection of amended Claim 1 as unpatentable over the cited references. Amended Claim 1 recites a compressor including a titanium compressor case and a compressor rotor arranged inside the compressor case, including plural titanium rotor blades. Amended Claim 1 also recites that each of the titanium rotor blades includes a rotor blade main body, a deposition layer formed at a tip end portion of the rotor blade main body, and an abrasive coating formed at a blade pressure side of the deposition layer. Furthermore, each of the titanium rotor blades includes fused portions respectively generated at a boundary between the deposition layer and the tip end portion of the rotor blade main body and at a boundary between the abrasive coating and the deposition layer. Moreover, each of the fused portions includes a composition ratio grading in a thickness direction and the fused portions are  $3\mu\text{m}$  or more and  $20\mu\text{m}$  or less in thickness.

As described in the specification as originally filed, Applicants have recognized that the rotor blade described for example in Claim 1 presents several advantages over conventional arrangements. For example, when the fused portions are  $3\mu\text{m}$  or more, the adhesion strength of the rotor blade increases.<sup>2</sup> Furthermore, when the fused portions are  $20\mu\text{m}$  or less deformation of the rotor blade is suppressed.<sup>3</sup>

The Office Action asserts that Draskovich as modified by Freling teaches the recited fused portions.<sup>4</sup> As discussed in the personal interview, both Draskovich and Freling are silent with regard to fused portions each including a **composition ratio grading in a**

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<sup>2</sup> See the published application at paragraph [0036].

<sup>3</sup> Id.

<sup>4</sup> See the Office Action mailed December 28, 2009, at page 6, lines 1-4.

**thickness direction.** Moreover, the cited references do not suggest or disclose fused portions that are 3  $\mu\text{m}$  or more and 20  $\mu\text{m}$  or less in thickness.

The Office Action argues that the specific thickness of the fused portions is a mere matter of design choice as the fused portions at specific thicknesses do not solve any stated problem.<sup>5</sup> However, as discussed in the personal interview and described above, Applicants have recognized that the recited range of thicknesses for the fused portions exhibit the twin benefits of **increased adhesion strength** and **decreased deformation**. As the specification as originally filed does in fact disclose a particular advantage for the recited fused portion thickness, the recited range is not a mere design choice.

As discussed in the personal interview, the recited thickness range of the fused portion is also not mere optimization. Only **result-effective variables** may be optimized. M.P.E.P. § 2144.05, citing *In re Antonie*, 559 F2d 618, 195 USPQ 6 (CCPA 1977), states that “a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimal or workable ranges of the said variable might be characterized as routine experimentation.” As discussed in the personal interview, both Draskovich and Freling are silent with regard to the particular fused portions. Accordingly, neither cited reference dimensions nor describes the recited fused portions. Moreover, the cited references are silent with respect to **any particular result** achieved by determining a thickness of the fused portions as defined in amended Claim 1.

Based on the foregoing, even the combined teachings of Draskovich and Freling do not suggest or disclose all the features of amended Claim 1. Accordingly, Applicants respectfully submit that amended Claim 1 is in condition for allowance.

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<sup>5</sup> See the Office Action mailed December 28, 2009, at page 6, lines 6-14.

Amended independent Claims 2, 4, 5, and 8 respectively recite fused portions that include a composition ratio grading and a thickness direction and that are 3  $\mu\text{m}$  or more and 20  $\mu\text{m}$  or less in thickness. For the reason discussed above, amended independent Claims 2, 4, and 5 are respectfully submitted to be in condition for allowance.

The dependent claims are respectfully submitted to be in condition for allowance for at least the same reasons as the independent claims from which they depend. Moreover, the dependent claims recite additional features not suggested or disclosed by the cited references.

As discussed in the personal interview, the features of new dependent Claim 18 are not suggested or disclosed by the cited references. In particular, new Claim 18 recites a tip end portion of the first electrode is shaped similar to the tip end portion of the rotor blade main body. The cited references do not suggest or disclose an electrode shaped like the object receiving the deposition. Accordingly, Applicants respectfully submit that the cited references do not suggest or disclose all the features of new Claim 18.

For the reasons discussed above, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1, 2, 4, 5, 7-9, 11, 12, and 14-20 is earnestly solicited.

Should Examiner Ellis deem any further action is necessary to place this application in even better form for allowance, he is encouraged to contact Applicants' undersigned representative at the below-listed telephone number.


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